physician to the Court of Florence, and also a poet of considerable eminence, set himself to refute the old doctrine of spontaneous generation, and was mainly instrumental in proving that maggots, &c., did not arise spontaneously in the surroundings where they are met with, but originate from eggs deposited by the parent insect. In fact, Redi accomplished a similar service to science to that performed by Darwin and his coadjutors in our own time, when they gave the death-blow to the analogous doctrine of special creation, though, in the latter case, the task was much more difficult, depending rather on logical inference from facts than on actual experimental demonstration.

We are glad to welcome a translation of one of Redi's most important works, his "Esperienze intorno alla Generazione degl' Insetti," which attracted much notice at the period, and went through many editions in Italian and Latin between 1668 and 1688, and was reprinted frequently afterwards in his collected works.

After setting forth various classical theories of the origin of life on the earth, Redi continues:—

"Although content to be corrected by anyone wiser than myself, if I should make erroneous statements, I shall express my belief that the Earth, after having brought forth the first plants and animals at the beginning, by order of the Supreme and Omnipotent Creator, has never since produced any other kind of plants or animals, either perfect or imperfect; and everything which we know in past or present times that she has produced, came solely from the true seeds of the plants and animals themselves, which thus, through means of their own, preserve their species. And although it be a matter of daily observation that infinite numbers of worms are produced in dead bodies and decayed plants, I feel, I say, inclined to believe that these worms are all generated by insemination, and that the putrefied matter in which they are found has no other office than that of serving as a place, or suitable nest, where animals deposit their eggs at the breeding season, and in which they also find nourishment; otherwise, I assert that nothing is ever generated therein."

In proof of these statements, Redi proceeds to describe the breeding of flies from maggots found in dead animals, dung, fruit, &c. He also discusses the question of the bees in the carcase of Samson's lion, and thinks that they made their hive in the dried skeleton; an explanation which is perhaps not quite impossible, though the general view nowadays is that in this (as certainly in some other cases where bees are supposed to have been generated from dead carcases) the insects were not bees, but flies (*Eristalis tenax*), which were mistaken for them.

In a similar manner, Redi discusses the origin of wasps and scorpions; the effect of the sting of the latter; the cannibalism of lions; the habits of spiders; the breeding of frogs, and the tenacity of life in Mantis. He was, however, puzzled by galls, the insects from which are very difficult to rear; and was much perplexed about their origin. The last portion of the book discusses lice and other animal parasites. The illustrations of these and other animals are excellent, especially considering the period at which they were produced.

OUR BOOK SHELF.

(1) *Smithsonian Mathematical Tables. Hyperbolic Functions.* Prepared by G. F. Becker and C. E. Van Orstrand. Pp. li+321. (Washington: Smithsonian Institution, 1909.)

(2) *Tafeln für numerisches Rechnen mit Maschinen.* Herausgegeben von O. Lohse. Pp. vi+123. (Leipzig: W. Engelmann, 1909.) Price 12 marks.

(1) THE increasing importance of hyperbolic functions in several branches of science and technology has led the Smithsonian Institution to furnish the computer with a more complete set of tables of these functions than was previously available. In the handsome volume before us are printed the natural values to five decimal places of the hyperbolic sine, cosine, tangent, and cotangent of u expressed in radians. The argument u advances by ten-thousandths from 0 to 0·1, by thousandths from 0·1 to 3·0, and by hundredths from 3·0 to 6·0. The logarithms of the above values are also given in separate tables. In order to facilitate interpolation the first derivatives of the functions multiplied by the tabular interval are tabulated in units of the last decimal place. To meet the rare cases in which higher values than six radians occur in calculations, some very high values of exponential $\pm u$ are appended to the seven-place tables of the exponential and its logarithm which are printed later on in the volume. To aid the computation of hyperbolic functions of complex variables, such as sinh $(u \pm iv)$, the values of the circular functions sin u and cos u, and of their logarithms to five decimal places, are provided with u expressed in radians. Tables are also provided of the gudermannian of u to seven places in radians, and also in degrees, minutes, and seconds. A few supplementary tables are printed for the convenience of the computer, one of which gives the natural logarithms of numbers from 1 to 1000, and another provides for the conversion of radians into angular measure and *vice versa*.

In preparing this volume a good deal of independent computation has been necessary in order to attain completeness and accuracy. In the introduction there is a useful compendium of formulas and integrals involving hyperbolic functions.

(2) Prof. Lohse, of the Astrophysical Observatory, Potsdam, has published these tables of reciprocals in order to simplify and extend the use of calculating machines in scientific computations. These machines deal readily with addition and multiplication, but in order to grapple with division it becomes necessary to take first the reciprocal of the divisor and then to multiply, *e.g.* to exhibit $n \div 1{\cdot}759$ as $n \times 0{\cdot}5685$. In this volume we have provided for us five-place values of the reciprocals of the natural numbers from 1 to 5000, and of the reciprocals of the trigonometrical functions of angles from 0° to 90° for every hundredth of a degree. Appended to the above are a few shorter tables, the most important of which is one of square roots, giving the values of $\sqrt{a}$ and $\sqrt{10a}$ side by side, very conveniently, for values of a from 1 to 1000.

Lehrbuch der praktischen Physik. By F. Kohlrausch. Elfte Auflage. Pp. xxxii+736. (Leipzig: G. B. Teubner, 1910). Price 11 marks.

IT is not necessary in general to say anything in praise of a book which reaches its eleventh edition, but there are special circumstances accompanying the appearance of the eleventh edition of the late Prof. F. Kohlrausch's "Lehrbuch der praktischen Physik" which justify a few remarks. In the first place, the preparation of this edition was one of the latest occupations of its author, who died in January (see NATURE, February 3), a few days after its appearance. Through-

out the forty years the work has been in the hands of students of physics, it has remained the pet child of its creator, and every page bears evidence of the care he bestowed on it. In the work of revision for the present edition, Kohlrausch was assisted by a number of his former pupils, now distinguished for their researches in special branches of the subject, so that it embodies the experience of the leading physicists in Germany. As an example of a section of the book only possible under a system of collaboration of this kind, that on radio-activity, by Prof. E. Dorn, may be mentioned as of special value. As a result, we have a book thoroughly up-to-date, which, as a work of reference for the physical laboratory, stands in a unique position, both on account of the large amount of valuable matter it contains, and for the completeness of its references.

In the second place, the author gives us in the preface a glimpse at the physical laboratories of Germany fifty years ago. There were then about two dozen professors of physics, a dozen assistants, and possibly about two dozen senior students engaged in research in the whole of the country. Apparatus was scanty, and had to be purchased out of a very meagre annual grant. A new professor who could bring with him his own apparatus, was regarded as a special windfall. Systematic instruction in practical physics was given at Königsberg, Berlin, and Heidelberg Universities only, but the need for better organisation of the universities in this respect soon became pressing, and was met by the appointment, in the later 'sixties, of a number of professors who had received their practical training in the above laboratories under Neumann, Magnus, and Kirchhoff. The change which has come about since then is remarkable. There are now many single laboratories in which a greater number of senior students are engaged in research than were so occupied in the whole of the laboratories of the country half a century ago.

The Schoolmaster's Year-book and Directory, 1910. A Reference Book of Secondary Education in England and Wales. Pp. lxxi+448+700. (London: The Year-book Press, c/o Swan Sonnenschein and Co., Ltd., 1910.) Price 7*s.* 6*d.* net.

THIS is the eighth annual issue of what has become an indispensable source of information to the educational worker. It consists of three parts, containing respectively general information, alphabetical lists of secondary schoolmasters, and a list of secondary schools. We are able to say from experience that the educational particulars provided by this work are accurate and up-to-date. Among new features of the book this year are important alterations in the section dealing with county and borough education authorities. It is interesting to note that the directory now contains more than 14,000 names, and that the list of secondary schools numbers about 1500. Altogether, the book deserves a wide circulation.

Egypt and the Egyptians. By the Rev. J. O. Bevan. Pp. xxii+224. (London: George Allen, 1909.) Price 5*s.* net.

THIS is a compilation of miscellaneous information about "Egypt and the Egyptians, their History, Antiquities, Language, Religion, and Influence over Palestine and Neighbouring Countries," written in old-fashioned style. It has no particular plan, and meanders about from one subject to another, but not unpleasantly. Sir G. H. Darwin, who disclaims "anything more than the superficial knowledge of Egypt which is open to any hurried tourist," has done Mr. Bevan the honour of writing a preface to his little book, which will no doubt give considerable pleasure, and convey a good deal of information and instruction to many readers.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Term "Radian" in Trigonometry.

DR. THOMAS MUIR, in his letter in NATURE of April 7 (p. 156), corrects the misapprehension implied in the "New English Dictionary," viz. the supposition that the word "*radian*" was first introduced in the "Treatise on Natural Philosophy" by Thomson and Tait.

Dr. Muir says he used the word in 1869 in St. Andrews, and goes on to say that it was after conversation with my father, the late Prof. James Thomson, in Glasgow, that the word was finally adopted in 1874.

I should like to point out that my father adopted the word some years before he came to Glasgow and before he met Dr. Muir. I have a memorandum in my father's writing saying that this name was proposed by him in July, 1871, and it appears in the printed examination questions set by him in the general class examination in Queen's College, Belfast, on June 5, 1873, and published, I believe, in the college calendar.

I well remember several conversations between my father and Dr. Muir with regard to the use of this and other words, but "*radian*" had already been adopted publicly by my father, and apparently had been already independently used by Dr. Muir. JAMES THOMSON.

22 Wentworth Place, Newcastle-on-Tyne, April 12.

The Yellow Colour in the Stoat's Skin.

IN her letter to NATURE of March 24 Miss I. Sollas remarks on the "canary-yellow" colour "in members of the stoat family when the winter whitening is incomplete," adding, "there can thus be little doubt that the yellow body produced artificially in the fur of the albino rat is a substance similar to the yellow pigment of the stoat's winter coat. . . ." I do not know whether it has been recorded, though I should have thought so, that a stoat's fur of the purest white will, after exposure to light in a museum case for a time, varying with the intensity of the light, invariably turn distinctly yellow—fainter, however, than "canary-yellow." I have made no chemical or microscopical examination of fur so yellowed, but the usual reason assigned for the change is the absorption by the hairs of a small amount of fat out of the skin, induced by the light and heat of summer. I understand, also, that ermine kept in a dark chamber or box the temperature of which is high will also turn yellow. Stoats in this part of the country often become white early in the season before any real cold weather has occurred. HENRY O. FORBES.

The Museums, Liverpool, April 12.

Transit of Halley's Comet across Venus and the Earth in May.

I BEG to direct attention to the following:—

It is my intention, at Kaafjord, in Finmarken (in the north of Norway), together with my assistant, Mr. O. Krogness, to take magnetic and atmospheric observations during the period May 7 to June 1 next in connection with the transit of Halley's comet across the sun's disc on May 18–19.

It is conceivable that the tail of the comet may consist chiefly of electrical corpuscular rays; and, if this be so, we should expect that these rays, owing to earth-magnetism, would be drawn in, in the Polar regions, in zones analogous with the aurora zones, assuming the tail of the comet to be of sufficient length to reach the earth.

These rays will then, in such a case, exercise, amongst other things, magnetic influences and electric inductionary effects, especially strong in the Polar regions, and it is particularly such effects we are desirous of tracing. The tail of the comet, if it should consist, as above assumed, of such radiant matter, will alter its shape at a very considerable distance from the earth, and we may expect to